

# Operation Manual

## Cobra 1 – Automatic Spray Gun



## Operation Manual Cobra 1 Automatic Spraygun Important

**Read and follow all instructions and Safety Precautions before using this equipment**

### CHARACTERISTICS

This automatic spray gun complies to ATEX regulations 94/9/EC, protection level II 2 G X, suitable to use in Zones 1 & 2.

This Cobra 1 is a production spray gun suitable for use with automatic and semi-automatic machine in conventional, HVLP or Trans-Tech application.

To handle a wide range of coating materials the material passages are manufactured from high grade stainless steel.

Fluid tips and needles are available in high grade stainless steel.

Pressure feed material supply can be re-circulating or direct.

The needle adjustment knob has 18 ratchet positions, allows fine and accurate fluid flow control.

### SPECIFICATIONS & MATERIALS OF CONSTRUCTION

	Thread	Pressure
Fluid inlet & recirculation "P"	1/4 BSP	Max 7 Bar
Air inlet (Atom+Fan) "A" "F"	1/4 BSP	Max 7 Bar
Cylinder/trigger "Cyl"	1/8 BSP	4 to 7 Bar
Maximum temperature in use	40° C	
Spray gun weight	720 g	
Gun body	Aluminium hard anodized	
Tip / Needle / Spray head	Stainless steel 303	

#### EC Declaration of Conformity

We, ITW Finishing UK, Ringwood Rd, Bournemouth, Dorset, BH11 9LH, UK, as the manufacturer of the **Spray gun model COBRA**, declare, under our sole responsibility that the equipment to which this document relates is in conformity with the following standards or other normative documents:

**BS EN 292-1 PARTS 1 & 2: 1991, BS EN 1953: 1999**; and thereby conform to the protection requirements of Council Directive **98/37/EEC** relating to **Machinery Safety Directive**, and;

**EN 13463-1:2001**, council Directive **94/9/EC** relating to **Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres protection level II 2 G X**.



**B. Holt**, General Manager  
24<sup>th</sup> April 2007

ITW Finishing Systems and Products reserve the right to modify equipment specification without prior notice.

# SAFETY WARNINGS



## Fire and explosion

Solvents and coating materials can be highly flammable or combustible when sprayed. **ALWAYS refer to the coating material supplier's instructions and COSHH sheets before using this equipment.**



Users must comply with all local and national codes of practice and insurance company requirements governing ventilation, fire precautions, operation and house-keeping of working areas.



**This equipment, as supplied, is NOT suitable for use with Halogenated Hydrocarbons.**



Static electricity can be generated by fluid and/or air passing through hoses, by the spraying process and by cleaning non-conductive parts with cloths. To prevent ignition sources from static discharges, earth continuity must be maintained to the spray gun and other metallic equipment used. It is essential to use conductive air and/or fluid hoses.



## Personal Protective Equipment

*Toxic vapours – When sprayed, certain materials may be poisonous, create irritation or are otherwise harmful to health. Always read all labels, safety data sheets and follow any recommendations for the material before spraying. **If in doubt, contact your material supplier.***



The use of respiratory protective equipment is recommended at all times. The type of equipment must be compatible with the material being sprayed.



Always wear eye protection when spraying or cleaning the spray gun.



Gloves must be worn when spraying or cleaning the equipment.

**Training** – Personnel should be given adequate training in the safe use of spraying equipment.

## Misuse

Never aim a spray gun at any part of the body.

Never exceed the max. Recommended safe working pressure for the equipment.

The fitting of non-recommended or non-original spares may create hazards.

Before cleaning or maintenance, all pressure must be isolated and relieved from the equipment.

The product should be cleaned using a gun-washing machine. However, this equipment should not be left inside gun-washing machines for prolonged periods of time.

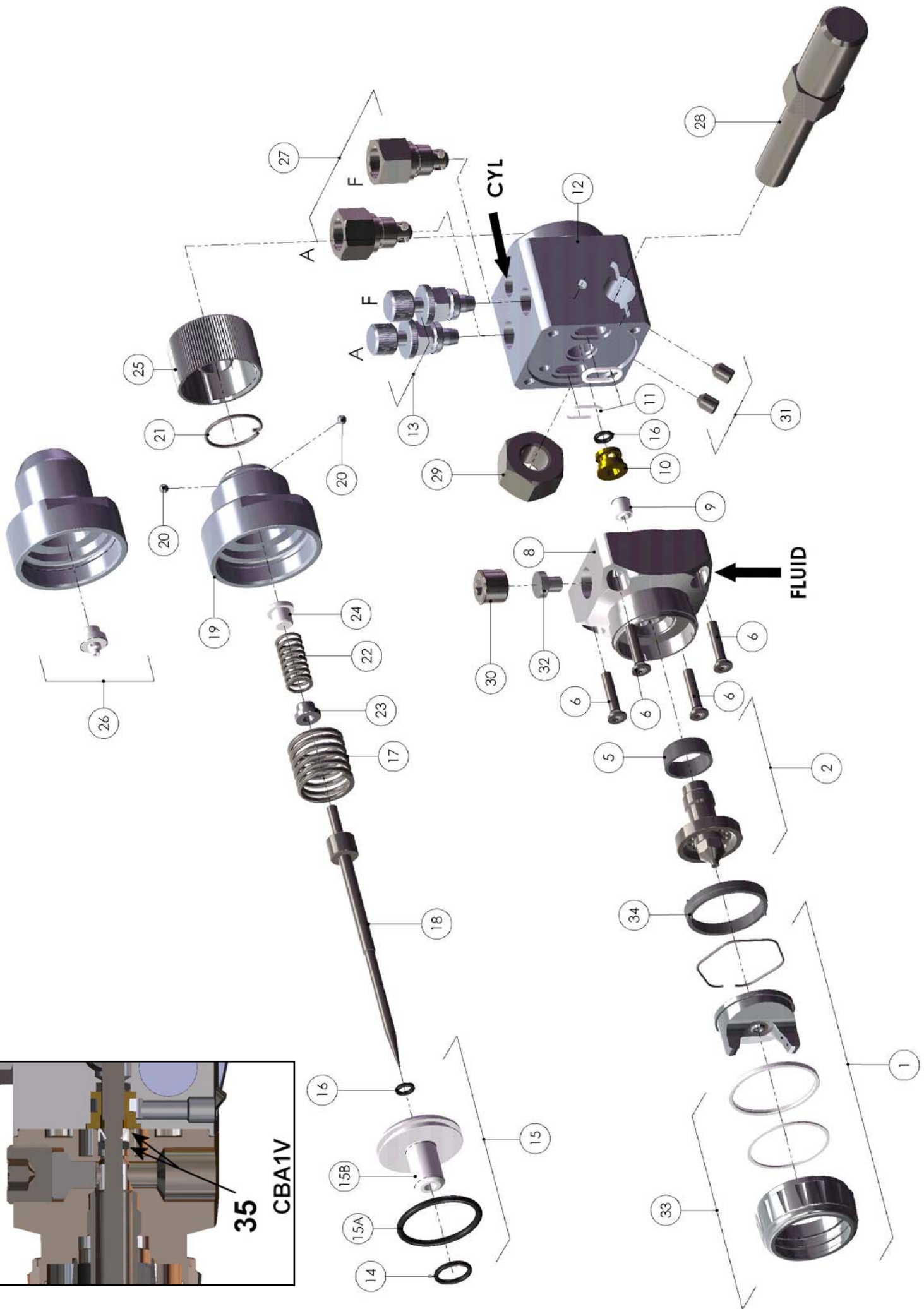
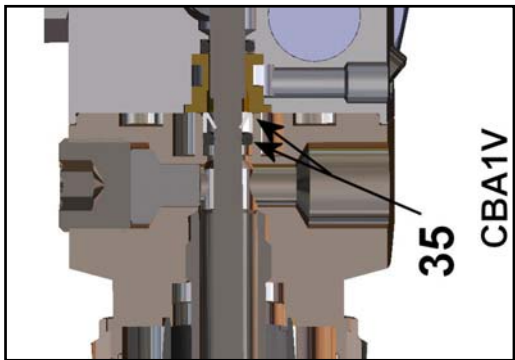
## Noise Levels



The A-weighted sound level of spray guns may exceed 85 dB (A) depending on the set-up being used. Details of actual noise levels are available on request. It is recommended that ear protection is worn at all times when spraying.

## Operating

Spray equipment using high pressures may be subject to recoil forces. Under certain circumstances, such forces could result in repetitive strain injury to the operator.



## LIST OF SPARE PARTS

Rep	Ref	Description	Qty
1	SP-100-xxx-K	Air cap and its retaining ring with seals. See chart	1
2	SP-200S-xx-K SP-247S-xx-K SP-259S-xx-K	Tip with air separator seal Ø 0,85 / 1,0 / 1,2 / 1,4 / 1,6 / 1,8 / 2,0 / 2,2 Ø 2,2 / 2,8 for Air cap 470 Ø 0,5 / 0,7 / 1,0 for Air cap 590	1
5	SPA-27-K5	Separator Kit of 5	1
6	S-14192-K4	Screw M4 x 25 kit of 4 (Torx 20 )	4
8	SPA-40	Spray head	1
9	SPA-86-K SPA-86-K10	Packing -Kit of 1 Packing -Kit of 10	1
10	SPA-10	Spacer	1
11	SPA-53-K10	Gasket kit of 10	2
12	SPA-1-CBA1	Gun body	1
13	AGG-403	Air valve (Fan and atomising)	2
14	S-28220X-K2	O Ring Kit of 2	1
15	SPA-6X-K	Piston + Seals (16,14,15a,15b)	1
15a	S-28225X-K2	O Ring Kit of 2	1
15b	SPA-6-CER-K	Piston	1
16	S-28219X-K4	O Ring Kit of 4	1
17	SPA-13	Piston Spring	1
18	SPA-310-xx-K SPA-310P-xx-K SPA-310N-xx-K	Stainless steel needle 0.5/0.7/0,85/1,0/1,2/1,4/1,6/1.8/2.0/2.2 Acetal Tipped Stainless Steel Needle 085-10 & 1,4 Hardened Needle 1,0 / 1,2 / 1,4 / 1,6	1
19	SPA-3	Housing	1
20	SPA-KK-1	Ring and ball for ratchet	1
21			3
22	SPA-31	Spring	1
23	SPA-37	Collar	1
24	SPA-49	Button	1
25	SPA-4	Adjusting knob	1
26*	SPA-7-K	Kit rear housing without adjustment	
27*	SPA-22-K2	Kit of air connector for remote control	
28*	AGGS-33	Mounting Bar	
29*	SS-659-CD	Nut	
30	S-18226	Plug ¼ BSP (No recirculation)	1
31	S-1444-H	M5 Set screw, 8 long	2
32	SPA-26	Plug (No recirculation)	1
33	ADV-403-K	Retaining ring & seals	1
34*	SPA-112	Index ring (Air cap)	1
35	SPA-20V-K5	Packing & O Ring kit of 5 (CBA1V)	1

\*Optional spare parts

## Model Part Number

**CBA1 – 522 - 12 =** [Type of gun] – [Air Cap] – [Ø Tip]

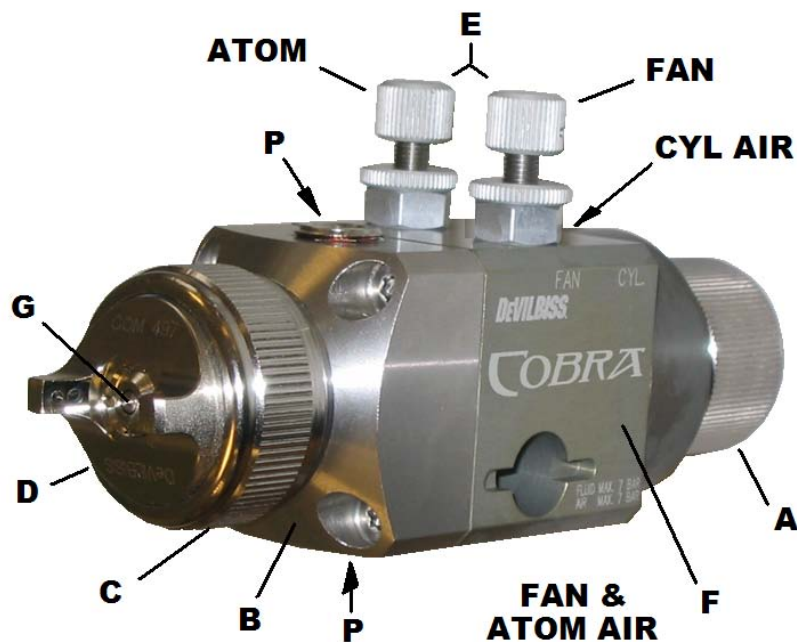
**CBA1V Spray gun for ceramic applications**

### AIR CAP CHART AVAILABLE

Air cap	Type	Air Flow (L / min)	At Inlet Pressure (bar)	Fluid Flow (ml / min)	Pattern size (mm)
SP-100-430-K	Conventional	340	3,5	200 - 280	200
SP-100-443-K	Conventional	345	3,0	200 - 300	300
SP-100-470-K	Conventional	465	3,0	500 - 1800	420
SP-100-497-K	Conventional	510	3,5	200 - 600	380
SP-100-500R-K	H V L P	195	1,0	130 –190	round
SP-100-505-K	H V L P	385	1,4	130 –190	270
SP-100-510-K	Trans-Tech	283	2,0	160 - 220	270
SP-100-513-K	Trans-Tech	531	3,0	200 - 600	350
SP-100-515-K	Trans-Tech	385	2,0	200 - 400	320
SP-100-522-K	Trans-Tech	410	2,0	200 - 600	350
SP-100-523-K	Trans-Tech	410	2,0	200 - 400	150
SP-100-590-K	Trans-Tech	218	2,0	50 -150	150
SP-100-590HV-K	Trans-Tech	310	2,0	50 - 150	120
SP-100-591-K	Trans-Tech	218	2,0	50 -150	150
SP-100-520-K	Trans-Tech	283	2,0	150 - 250	280

### STANDARD COMBINATION RECOMMENDED

Type	Conventional				HVLP		Trans-Tech								
Air Cap N°	430	443	470	497	500R	505	510	513	515	520	522	523	590	590HV	591
TIP Ø mm	0,5	X		X									X		X
	0,6														
	0,7		X		X								X		X
	0,85	X	X		X	X	X	X		X	X				
	1,0	X	X		X		X	X			X	X	X		X
	1,2	X	X		X		X	X			X	X			
	1,4	X	X		X	X	X	X			X				
	1,6	X			X	X	X	X			X	X			
	1,8	X	X		X			X	X			X			
	2,0														
	2,2			X	X		X	X				X			
	2,8			X											
Combination « X » are available and fitted as standard.															



A	Adjusting knob
B	Sprayhead
C	Air cap Retaining Ring
D	Air Cap
E	Valve (Fan and atom)
F	Body
P	Product inlet/ outlet
G	Fluid tip

## INSTALLATION



**Important :** To ensure that this equipment reaches you in first class condition, protective coatings have been used. Flush the equipment through with appropriate solvent before use.  
Fix the spray gun using mounting stem ref.28 and secure it with nut ref.29.

## HOSES

Use separate filtered regulated air supplies for atomizing and cylinder air. Connect the cylinder air 'CYL AIR' on top of the body via a control valve. For fast cylinder operation the control valve should be fitted as close to the gun as possible or an additional quick exhaust valve installed in the line. Attach atomizing air hose to the inlet threaded hole 'FAN & ATOM AIR' under the gun body.

Connect material hose(s) 'P' to the spray head. If material re-circulation is required, remove plugs (30) & (32). Fit standard connector (1/4" BSP) to the spray head.

Recommended hose size up to 10m (34ft) long :  
Atomization Air : 8mm, Cylinder Air : 6mm, Material : 9,5mm



**Important :** The Spray gun must be earthed to dissipate any electrostatic charges which may be created by fluid or air flows. This can be achieved through the Spray gun mounting, or conductive air/fluid hoses. Electrical bond from the spray gun to earth should be checked with an ohmmeter. A resistance of less than  $10^6$  Ohms is recommended.

## SETTING

1. The **ATOM** air valve controls the atomizing air pressure **FAN** valve reduces the spray pattern size. To increase the pressure turn clockwise, to reduce turn counter-clockwise.
2. Fluid flow can be adjusted with the rear ratchet knob, fluid flow is increased when you turn the knob counter-clockwise.
3. For the arrangement of the parts, refer the exploded view at the end of the manual.

## STARTING UP

1. Turn the needle adjusting knob **(25)** clockwise until the needle is fully closed.
2. Turn the **FAN** and **ATOM** air valves **(13)** counter-clockwise to be full open.
3. Use the air cap chart above to set the air pressure at the air regulator to achieve recommended pressures above.
4. Turn the adjusting knob **(25)** counter clockwise to obtain the desired fluid flow.
5. Test spray. If the finish is too dry or fine, reduce the airflow by reducing the air inlet pressure or by screwing the valve **ATOM (13)** in clockwise, or increase the fluid flow using ratchet knob, rotating counter clockwise.
6. If the finish is too wet, turn the ratchet knob **(25)** in clockwise to reduce the fluid flow, or reduce the fluid pressure.  
If the atomization is too coarse, increase inlet air pressure, or reduce fluid flow.
7. The pattern size can be reduced by turning adjusting valve **FAN (13)** clockwise.
8. The spray pattern will give the best results when perpendicular to the target.
9. The recommended spray distance is 150-220 mm (6" to 8").
10. Spray edges first. Overlap each stroke a minimum of 50%. Move gun at a constant speed.
11. Always turn off air and fluid supply and relieve pressure and clean down when gun is not in us.

## PREVENTIVE MAINTENANCE

1. Turn off air and coating supply and relieve pressure in the supply lines, or disconnect from airline and fluid line.
2. Remove air cap **(1)** and clean. If any of the holes in the cap are blocked with coating material use a toothpick to clean. Never use metal wire which could damage the cap and produce distorted spray patterns
3. Ensure the nozzle of the fluid tip **(2)** is clean and free from damage. Any build up of dried paint can distort the spray pattern.

## REPLACEMENT OF PARTS

Turn off air and coating supply and relieve pressure in the supply lines, before any maintenance operation.

### Tip (2) & needle (18)

Remove the air cap **(1)** by unscrewing its retaining ring counter- clockwise.

Remove the tip **(2)** and its air separator ring **(3)** by unscrewing by unscrewing counter- clockwise with 10mm hexagonal spanner.

Unscrew the adjusting needle knob **(25)** fully in counter-clockwise rotation, push the needle from the



front of the spay gun, carefully so to avoid damage the needle end, then pull out the needle **(18)** from the back.

If necessary, replace the needle and the tip, first screw the tip with its air separator ring (recommended torque between 9,5 to 12 Nm).

Lubricate all the surface of the needle which will be in contact with the packing and O ring. Slide the needle into the spray gun from the back.

Fit the needle springs with its plastic pad **(22,23,24)** and screw the needle adjusting knob **(25)**.

### Packing seal (9)

Unscrew the air cap **(1)**, tip **(2)** and its air separator ring **(3)**.

Unscrew the 4 screws **(6)** to disassemble the gun head **(8)**.

Push back the packing seal **(9)** using a rod diameter 5,5mm from the front of the gun head. Clean the packing location hole carefully with adequate solvent.

Fit a new packing seal **(9)** U face towards the fluid passage.

### Packing seal (35) CBA1V

Unscrew the air cap **(1)**, tip **(2)** and its air separator ring **(3)**.

Unscrew the 4 screws **(6)** to disassemble the gun head **(8)**.

Push back the packing seal and O ring **(35)** using a rod diameter 5,5mm from the front of the gun head. Clean the packing location hole carefully with adequate solvent.

Fit a new O ring and packing seal **(35)** U face towards the fluid passage.

### Fan & Atom air valve (13)



**Before assembling, check the air valve is in fully open position by unscrewing it counter-clockwise.**

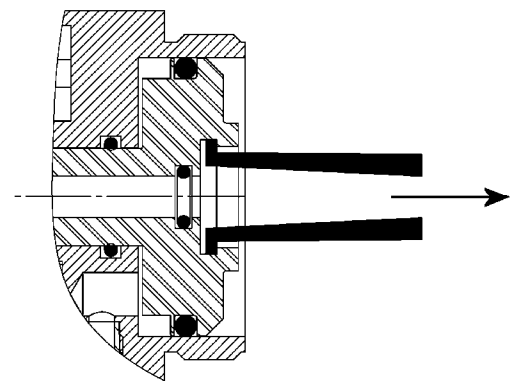
### Piston (15), O ring (16) & (14)

Unscrew the rear housing **(19)** at the back of the gun body counter clockwise, pull out the needle **(18)**.




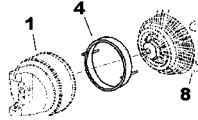
Use bent nose pliers so to pull out the piston which has a 12mm internal groove for this purpose.

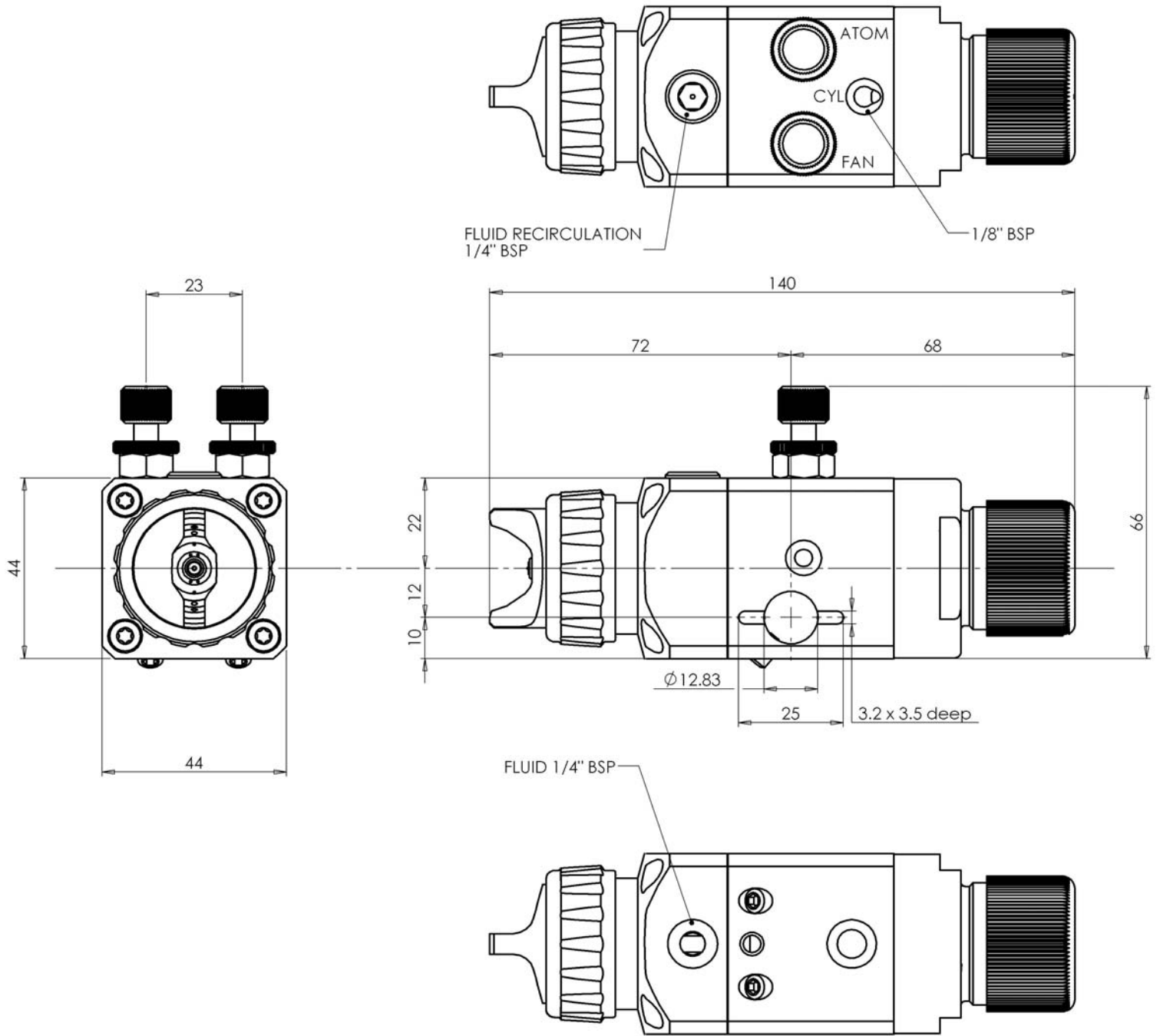
It's recommended to replace the o ring **(14)** into the gun body as soon you disassemble the Piston.

If necessary, when replacing the piston, slightly lubricate the piston lip before fitting into the gun body.



## OPTIONS

<b>Spray gun without needle adjustment</b>	
Part number: <b>SPA-7-K</b> This kit includes the back piece and washer to replace the part items 19, 20, 21, 24, 25, on the exploded view.	
<b>Spray gun with “Atom” &amp; “fan” remote control</b>	
Parts number: <b>SPA-22-K2</b> This includes 2 connectors taking place of the two 2 air valves (13) on the exploded view.	
<b>Spray gun shaft</b>	
Part number: <b>AGGS-33</b>	
<b>Nut for spray gun shaft</b>	
Part number: <b>SS-659-CD</b>	
<b>Ring to index air cap with spray gun head</b>	
Part number : <b>SPA-112</b> : Indexed ring 0 & 90°	



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